

Ranger Carbine

Build Guide & Doctrines of Use

2020 Edition

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Ranger Carbine – Build Guide & Doctrines of Use

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Chapter 1

Introduction

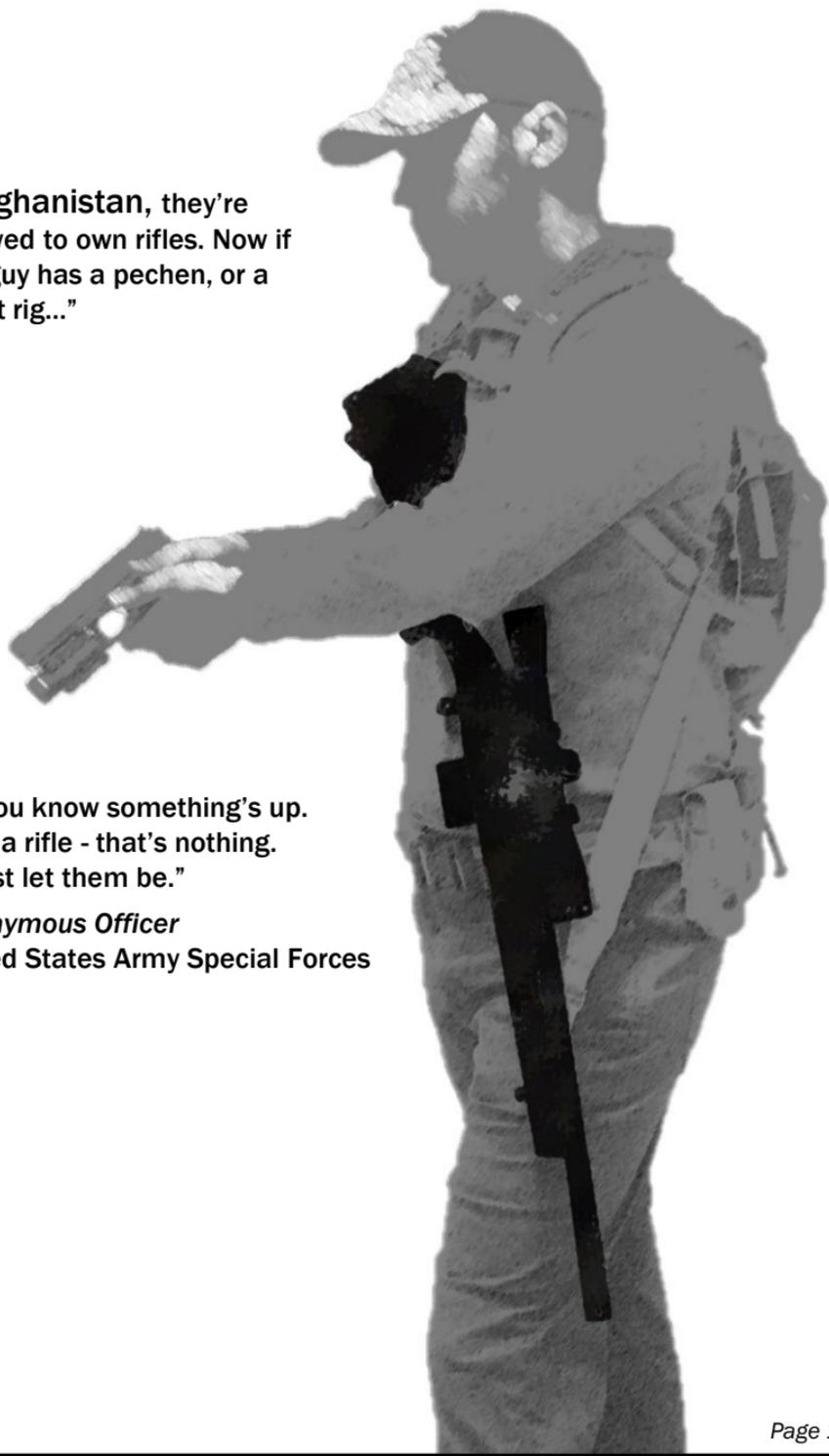
Ranger Carbine – Build Guide & Doctrines of Use

The ranger carbine is the core of a discreet yet potent civilian weapon rig.

“In Afghanistan, they’re allowed to own rifles. Now if the guy has a pechen, or a chest rig...”

“...then you know something’s up. But just a rifle - that’s nothing. We’d just let them be.”

- *Anonymous Officer*
United States Army Special Forces



The Ranger Carbine Concept

A ranger carbine is a civilian firearm built to excel at tasks and scenarios where AR-pattern, AK-pattern, and similar rifles tend to underperform. An individual civilian has wildly different priorities and resources versus a military or police division, so the ranger carbine optimizes concealment, mobility, and cold-bore accuracy - a civilian's best (and sometimes only) assets.

AR-pattern, AK-pattern, and similar rifles offer enormous firepower and their place in civilian gun vaults is assured – there are times when no other gun will do. However, the performance of these military-derived guns burns bright and fades fast when they are cut off from a government logistics and supply chain, such as when they are placed into civilian hands. As a civilian, if you find yourself needing that much firepower, then you are either very unlucky or (more likely) you have simply made too many mistakes that day.

Some threats are best neutralized via a civilian's unique superpower: obscurity. Only as a plainclothes civilian can you be unremarkable, even unnoticeable - until the moment you act.

The ranger carbine's discreet appearance, outstanding mobility, and cold-bore accuracy are potent assets in civilian hands, with the inconspicuous silhouette being arguably its most important advantage. While all firearms will attract some amount of attention, AR-pattern, AK-pattern, and similar rifles have extremely distinctive silhouettes that make the civilian carrier a priority target for everything from overflying drones to hidden sharpshooters to search-and-seizure operations intent on curbing civil unrest.

Threats such as these are incredibly discouraging - they are difficult to anticipate, often impossible to counter, and they render an individual civilian's bravery, skill, and firepower meaningless. The AR-pattern, AK-pattern, and similar rifles that already populate private gun vaults are powerful weapons well-suited for certain types of fights, but many threats on the civilian's battlefield demand the element of surprise and a speedy, discreet withdrawal much more than they demand firepower.

Concealment. Mobility. Accuracy.

These are the assets of the armed civilian. These are the assets of the ranger carbine.

Civilian Rig

Toolboxes exist because no single wrench can do everything. While the ranger carbine is a good jack of all trades, it's just one wrench in the toolbox and isn't meant to stand on its own.

The sidearm, war belt, and backpack multiply the individual shooter's capabilities far beyond what the ranger carbine alone can do. Practical, portable, and discreet, this civilian rig keeps both hands free and lets you run, climb, crawl, and swim at a moment's notice, achieving civilian survivability that other weapon rigs cannot match.



Guiding Principles of the Ranger Carbine

All design choices for your ranger carbine, from the type of optic to the length of the barrel, should be guided by the three principles listed below.

Principle #1 – Low Carry Weight

The rifle's carry weight must be less than 7.50 pounds, a goal weight inspired by the 'mountain rifles' already carried long distances over varied terrain in high-altitude hunts each year. The carry weight includes the rifle itself, the sighting system (typically an optic), the sling, a loaded magazine, and any other hardware or accessories. Ideally, the carry weight will be lower – 7.50 pounds is the absolute maximum. This is the most challenging principle to achieve on a budget.

Principle #2 – Discreet Practicality

The rifle must have a discreet silhouette that does not readily reveal itself as more than a civilian hunting rifle. The rifle must be chambered in an affordable, widely-available intermediate cartridge. The rifle must be pleasant to shoot, exhibiting moderate recoil and muzzle blast that is unlikely to cause immediate hearing damage if fired (occasionally) without hearing protection. The rifle must be able to humanely take game up to the size of white-tailed deer at short range. The rifle must be legal to own in most or all states of the USA and many countries of the world.

Principle #3 – Versatile Accuracy

There are two measures to this principle, one for offhand shooting and one for bipod-assisted shooting – a ranger carbine must be versatile enough to accomplish both. Mid-to-high quality hunting or tactical ammunition is preferred for testing against this principle, as this is the ammunition the shooter could reasonably expect to have on-hand at any given time.

- With the shooter standing and using only an optional sling for stability, the rifle (and shooter) must achieve a 5 shot group with a maximum spread of 8.00 MOA *in under 45 seconds*.
- With the shooter prone or sitting and using only a bipod for stability, the rifle (and shooter) must achieve a 5 shot group with a maximum spread of 1.50 MOA *in under 45 seconds*.

The Versatile Accuracy Principle is tested on the longest range available to the shooter, up to a maximum of 300 meters. The table below summarizes the accuracy requirements at various distances. Note that the group size measurements are calculated using simplified "shooter's MOA" (1.0 inches at 100 meters) rather than true MOA (1.047 inches at 100 meters).

Ranger Carbine Accuracy Requirement		Range in Meters				
		50	100	150	200	300
Maximum Allowable Group Size	Standing Offhand (sling is permitted)	4.0"	8.0"	12.0"	16.0"	24.0"
	Bipod-assisted	0.75"	1.50"	2.25"	3.0"	4.5"

Note: To effectively simulate field conditions, shooting bags, rifle rests, and other heavy-duty shooting aids cannot be used in lieu of a bipod when testing the Versatile Accuracy Principle. The only shooting rest permitted is the bipod itself.

Requirements

In addition to achieving the three Guiding Principles, the below features must be present for your rifle to qualify as a ranger carbine:

- Flash suppressor
- Detachable magazine
- Bipod (carried stowed, does not count toward the Low Carry Weight Principle)
- Sling
- Training sessions totaling 50 rounds per quarter or 200 rounds per year (minimum).
- An anti-reflective device (if the sighting system features a glass lens).

“Desire-ments”

The below features are highly recommended for your ranger carbine, but are not required:

- Sound suppressor (carried stowed, does not count toward the carry weight).
- Sighting system dialed to a “battle zero” setting.
- Multiple spare magazines including one low-capacity, flush-fit magazine for distance carry.
- Length-of-pull adjustments to custom-fit the stock to your body.
- Comb height adjustments to custom-fit the stock to your face’s shape and chosen sight.
- Discreet ventilation holes in the stock forearm to enhance barrel cooling.
- Accurizing enhancements, such as glass bedding and pillar bedding.
- A dull-colored stock, periodically re-painted to match season or geography.
- A ‘proof trial’ consisting of a multi-mile hike through technical terrain while carrying your ranger carbine and full civilian rig, including sidearm, war belt, and backpack. The purpose of this hike is to test the comfort, maneuverability, and durability of your chosen kit components.
 - Hunting season is a good time to make this hike, as hunting areas will provide both an opportunity to hike with a slung rifle, as well as testing whether your kit “blends in” without attracting undue attention.
 - This hike will show what does and doesn’t work about your kit – most of your insights will appear in the first mile, if not the first 500 feet.

Note: *Adjustments to your kit based on lessons learned during this hike form the final step of assembling your ranger carbine and civilian rig.*

Comparison to Jeff Cooper's Scout Rifle Concept

While similar in appearance and function to Jeff Cooper's scout rifle concept, the ranger carbine differs in several critical ways that each provide unique advantages. Many of these differences stem from one major design difference between the ranger carbine and the scout rifle:

The ranger carbine is not chambered in .308 or any other full-power rifle round.

The ranger carbine opts for an intermediate cartridge such as 7.62x39, rather than the scout rifle's .308 chambering. Cooper chose .308 (7.62 NATO) to let the scout rifle hunt any animal in North America, both four-legged and two-legged. However, the scout rifle's .308 chambering led to a number of serious flaws when actually owning and shooting the rifle day-to-day:

- .308 from a carbine barrel risks immediate, permanent hearing damage if fired without ear protection, as well as creating a huge, easy-to-spot muzzle flash (with most loads).
- .308's case volume is too large to be easily optimized for subsonic (suppressed) shooting.
- .308 requires heavy action parts, in turn requiring extremely costly carbon fiber stocks or skinny barrels (which overheat quickly) in order to keep the overall rifle's weight low.
- .308 scout rifles have very stout recoil - target practice with a 6.6 lb .308 just isn't much fun.

Narrowing the ranger carbine's hunting range to thin-skinned game (deer) and below permits chambering in a more practical intermediate cartridge, which alleviates all the above problems and provides the ranger carbine with three critical advantages over the scout rifle:

(1) It is lighter – the “stripped” rifle (no accessories) should weigh under 6.0 lbs.

Dropping the .308 chambering lets the ranger carbine set the bar even lower than Cooper's scout rifle. The base ranger carbine rifle should weigh in well under 6.0 pounds, whereas J. Cooper's scout rifle weighed in at 6.6 pounds.

(2) It is much cheaper, both in initial purchase price and ammunition costs.

Opting for an intermediate cartridge permits a smaller, lighter action, eliminating the need for expensive weight-saving solutions like titanium parts or carbon fiber stocks. At least three manufacturers offer intermediate caliber bolt-actions that weigh at or below 6.0 pounds for under \$500, less than half the cost of a typical scout rifle such as the Steyr Scout. Training ammunition is also (typically) much less expensive.

(3) It is much more pleasant to shoot.

Target practice with 6.6 pound .308 scout rifle tends to stop after a box or two (whether the owner will admit why or not). Recoil is a consideration in a lightweight, fixed-action carbine - if your rifle's recoil is unpleasant, sooner or later you will find excuses to train with it less.

Additionally, there is not always time to put on hearing protection. Pop two or three shots and it's great news that you've resolved the situation, but if your ears are ringing for the next few hours, then you haven't really done your survivability any favors. While no firearm is truly hearing-safe without a suppressor, intermediate cartridges are noticeably quieter than full-power rifle rounds like Cooper's .308, especially when fired from carbine-length barrels.

Miscellaneous Differences

The ranger carbine's required flash suppressor and optional sound suppressor optimizes the weapon for use as a concealed sharpshooter's rifle. Additionally, the ranger carbine's detailed build guide clarifies the points left vague in the scout rifle concept, such as whether an optic is included in the weight limit. Finally, the ranger carbine drops most of Cooper's more idealistic requirements, such as integrating a bipod into the forearm and insisting on LER scopes for their improved peripheral vision. The end result is a gun that is light, fun to shoot, and cheap enough for most people to own - when was the last time you saw a Steyr Scout in-person?

Chapter 2

Ranger Carbine Build Guide

Choosing a Base Rifle

For most shooters, a bolt-action rifle is the smart choice for building a ranger carbine. However, many common (and even well-respected) bolt-actions are grossly overweight – if an optic will be used, the base rifle should weigh less than 6.0 pounds, but most bolt-actions from Remington, Winchester, Savage, and similar companies weigh over 7.0 pounds without any accessories.

These fat rifles can be quickly slimmed by wrapping a \$600 hand-laid synthetic stock around them, but that is cost-prohibitive for most shooters. Instead, it's best to start with a rifle that was built light from the ground up. The three rifles below are each offered in variants that weigh near, or below, 6.0 pounds:

Howa 1500 Mini

Pros

- 3-position safety can lock the bolt closed during carry.
- Howa's HTAC trigger leaves little room for improvement right out of the box.
- Mauser action is time-tested, easy to single-load, and mounted in a light, feature-rich stock.
- Available in a broad range of calibers.

Cons

- Only 5-round magazines are available in 7.62x39 and 6.5 Grendel (no flush-fit or extended options, although magazines can be modified by hand to fit flush or increase capacity).
- Bottom metal/magazines are all plastic (aftermarket aluminum bottom metal is available).
- The front-mounted magazine catch is easy to hit accidentally, which will drop the magazine.

CZ 527

Pros

- CZ's single-set trigger is one of the best triggers available, both factory and aftermarket.
- Mauser action is time-tested, easy to single-load, and mounted in a light, feature-rich stock.
- Choose between 7.62x39, .300 Blackout/.300 Whisper, and .223 Remington/5.56 NATO.

Cons

- High base price, compared to the competition.
- Magazines are expensive at around \$50 each, and not all calibers/models are available with flush-fit magazines. No extended magazine options.
- Bolt cannot be locked closed for transport (aftermarket 3-position safety is available).

Ruger American – Ranch

Pros

- Low base price, compared to the competition.
- Factory 16" threaded barrel, so the only additional cost is barrel fluting.
- Uses Ruger Mini-30 or AR-15 magazines, which are cheap and available in many capacities.
- Double-stack magazine can be topped off through the ejection port.
- Full-diameter bolt body and 70° bolt throw make the action fast and virtually bind-free.
- Available in a broad range of calibers.

Cons

- Tube-stock receiver is more difficult to single-load, although it is cheap and accurate.
- Budget-conscious stock with integrated trigger guard has suspect long-term durability.
- Action and trigger pack are inexpensive and (comparatively) unproven.
- Bolt cannot be locked closed and could open if handle catches on foliage or vehicle interiors.

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Notes on Semi-Automatic Ranger Carbines

There are several reasons that semi-automatic rifles are not an ideal choice when building a ranger carbine. The first reason is pure availability – most semi-automatic rifles are just too heavy and/or too inaccurate. A ranger carbine base rifle should weigh less than 6 pounds, and there are precious few semi-automatic rifles in that weight range than can live up to the ranger carbine's 1.5 MOA bipod-assisted accuracy standard. The obvious exception is an AR-pattern rifle with lightweight furniture and a quality barrel, but this brings us to the second reason semi-automatics are not ideal: they draw too much attention.

Like most semi-automatic rifles, an AR-pattern rifle has an extremely distinctive silhouette, and carrying one is an excellent way to guarantee that a drone operator overhead or a sharpshooter in the brush or will decide you to lavish their attention on you in particular. Although there are a few furniture options that make ARs look less militaristic, they are all very heavy and will quickly push the finished rifle's weight above the maximum of 7.50 pounds.

More importantly, the firepower offered by semi-automatics doesn't mesh with the ranger carbine's tactical doctrine – the gun is not meant to slice pies or storm doors. A ranger carbine should only be fired in anger when the shooter has the element of surprise, and once that element is gone, it's time to relocate. Mobility and a discreet appearance are far more critical to civilian survivability than pure firepower. Furthermore, the average civilian has neither backup nor resupply coming to them - if you find yourself in a situation where you really need the firepower of a semi-automatic rifle, then you have made too many mistakes that day.

Finally, the third reason semi-automatics make poor ranger carbines is that they are subject to legal restrictions in certain locales and are therefore a more niche weapon – if you cannot bring it with you, or the local authorities seize it during a period of civil unrest, then all that firepower is useless to you.

That said, semi-automatics can be made into ranger carbines. They are not ideal, but as long as you've met the three Guiding Principles, then you've done it right. If you insist on having a semi-automatic ranger carbine, see the [Base Rifles for Nonconformists](#) section on the next page. It recommends a number of unusual rifles that can be built into ranger carbines, including a few semi-automatics.

Barrel Contour, Length, and Fluting

One of the biggest drawbacks of the J. Cooper's scout rifle concept was that it almost always required a lightweight, sporter-profile barrel. This made training drills and even routine target practice a headache, as the skinny barrels would quickly overheat and lose accuracy for long stretches while they slowly cooled.

A well-built ranger carbine, on the other hand, has no problem making weight with a medium or even heavy-profile barrel, despite the base rifle weight requirement being half a pound lighter (or more) than J. Cooper's scout rifle. A ranger carbine's action (and thus its stock and bottom metal) is substantially lighter by default, since it isn't chambered in .308, and a ranger carbine's barrel is both shorter and (almost always) aggressively fluted, both of which cut weight even more. This translates to a lot less time spent waiting for your barrel to cool, and a lot more time spent hitting the target.

In short, a ranger carbine's barrel should be short, thick, and aggressively fluted, ensuring extreme rigidity as well as resisting the accuracy-diminishing effects of heat and cooling much more quickly than a comparable hunting rifle or scout rifle barrel due to its greatly increased surface area. Some or all of these features can be found in factory rifles, but typically, time and money must be spent at a gunsmith to achieve all three.

Base Rifles for Non-Conformists

For most shooters, the search for a base rifle will end with one of the bolt-actions listed on page 7. However, there are a few designs out there that manage to meet (or almost meet) the requirements for a ranger carbine while maintaining a discreet silhouette and also bringing unique benefits to the table.

Ruger 77/357

A bolt-action, box magazine-fed rifle chambered in .357 Magnum and weighing a svelte 5.5 pounds. Steel-cased .38 Special is dirt cheap, and while this gun is pricey and .357 is no rifle round, this is the only ranger carbine that could share ammunition with a companion revolver.

M1 Carbine or clone (various manufacturers)

One of few semi-automatics that can both make weight and keep a low profile, the M1 Carbine is proven, potent, and weighs a feathery 5.1 pounds. .30 Carbine is modestly priced and while its hunting prowess and accuracy are suspect, this gun's semi-auto firepower can compensate.

Browning BLR

This lever-action, box magazine-fed rifle has an quick rate of fire and a sleek profile. Some models break into two halves for transport and all boast Browning-grade accuracy. Drawbacks are a 4-round magazine, a high price tag, and .223/5.56 is the only intermediate chambering.

Ruger Mini-14 & Mini-30

The Ruger Mini is a reliable semi-automatic offered in several calibers, but its accuracy is no more than acceptable and its cost is disappointingly high. More problematic is weight – there just aren't many, if any, cost-effective ways to get this rifle down below 6.0 pounds.

Remington 7615

This pump-action rifle offers a much higher rate of fire than any bolt-action, and a free-floating barrel keeps accuracy up to par while also feeding from standard AR-15 magazines. The regular 7600 is still produced, but this .223/5.56-only model is both discontinued and a bit heavy.

AIA M10A2

This rare bolt-action rifle feeds 7.62x39mm from any AK-pattern magazine. The action is a Lee-Enfield variant, famous for its quick-firing, cock-on-closing operation. Sadly, importation of this rifle ceased years ago, it's a bit heavy, and its accuracy suffered from poor quality control.

Establishing a Battle Zero

A 'battle zero' is a method of zeroing a rifle's sighting system to permit point-of-aim hits at both close range and long range, with no adjustment – just point and shoot. In contrast, a traditionally zeroed firearm will only be able to score point-of-aim hits at/near the zeroing distance, and will need to be adjusted for encounters at other ranges. Battle zeroes are set at very close ranges, so they are also substantially easier to dial in versus the more traditional 100, 200, or 300 yard zeroes as there is both greater precision available from the rifle at short range, and a *lot* less walking downrange. However, parallax error is also more pronounced, so be careful with your cheek weld to ensure your zero is true.

The trick to a battle zero is to use a relatively close-range zero, often between 10 - 40 yards. For a typical ranger carbine with a 16" barrel, chambered in 7.62x39mm and with a compact scope mounted 1.5" above the bore, a good battle zero setting is around 22 yards.

To achieve a hit on point-of-aim at such a short range, the sighting system will need to be adjusted until the rifle's barrel is tilted slightly upward (since the sight's centerline is above the barrel's centerline). This means the bullet is still gaining altitude by the time it hits zero, which simulates a reduced bullet drop at longer distances and allows a rifle zeroed at only a few dozen meters to maintain a very similar point-of aim out to a few *hundred* meters.

Zeroed at 22 yards, a typical 7.62x39mm ranger carbine is headshot-accurate from 0 to 200 yards, as the bullet will impact no more than ~2.50" off from the point of aim. The same gun is easily capable of center mass hits out to 300 yards, at which point less than 20.0" of drop will be seen. This allows point-and-shoot firing from 0 – 300 yards without one single click of elevation adjustment, in spite of 7.62x39mm not being a particularly flat-shooting cartridge. The below table shows point-of-impact changes, relative to point-of-aim, at various distances with this rifle configuration:

22 yd Zero

Range in Yards	Point-of-Impact Elevation Change
50	+ 1.38"
100	+ 2.35"
150	+ 1.12"
200	- 2.67"
250	- 9.45"
300	- 19.72"

Ammunition: Wolf 7.62x39mm FMJ, 124 gr

Data Courtesy of www.shooterscalculator.com

The ideal battle zero will vary based on an individual gun's chambering, barrel length, and the sighting system's height-over-bore. There are many free resources online to determine your particular rifle's muzzle velocity with a given load, and ballistic calculators to determine your optimal battle zero, but all data should be verified with live rounds in the field.

Estimating Weight and Weight Reduction

7.5 pounds may seem like a generous weight limit, but in most builds, the base rifle (receiver, barrel, trigger group, stock) will need to weigh 6.0 pounds or less in order to meet this goal. Accessories, in particular optics, will quickly eat up the remaining 1.5 pounds of weight.

A typical ranger carbine build will often break down along these lines:

- Base rifle with loaded magazine..... 5.5 – 6.0 lb
- Optic + mount..... 1.0 – 1.5 lb (16 – 24 oz)
- Sling, connectors, and sling mounts..... 0.5 lb (8 oz)
- Comb riser, LOP spacers, stock pouch, etc..... 0.2 lb (~4 oz)
- Muzzle device, miscellaneous hardware..... 0.1 lb (~2 oz)

Be wary of ounces – they grow up to be pounds.

Fluting, Threading, and Other Machine Work

Note: *As a rule of thumb, expect to drop approximately 0.5 lb from your build by having your barrel shortened to 16" and fluted. The exact weight will vary based on the original barrel's length and profile, but 0.5 lb is a good estimate.*

At some point, most ranger carbines will need to have their barrel shortened, threaded, and/or fluted. Threading (adding screw threads to the muzzle) is necessary to permit the use of flash and sound suppressors, and fluting (making shallow, symmetrical cuts around the barrel's circumference) the barrel drops weight from the build while also enhancing the barrel's rigidity and cooling performance.

When shortening the barrel, 16" is an optimal barrel length for most builds – it cuts the maximum amount of weight while still maintaining acceptable velocities and legal simplicity. For most 7.62x39mm loads, 16" barrels are especially advantageous because for that caliber, 16" has been shown to produce more consistent muzzle velocities than any other barrel length, making it an ideal length for obtaining good accuracy with factory 7.62x39mm loads.

Fluting is largely up to the shooter's budget and tastes, but many shallow flutes is preferable to a few deep flutes. Opinions vary on the effectiveness of various fluting patterns, such as straight fluting versus spiral fluting versus diamond fluting, so again, shooter budget and tastes will be the overriding factor.

Additional machining operations, such as fluting the bolt and threading the bolt knob for an aluminum handle, can drop weight even more, but these are primarily aesthetic improvements. They are typically too expensive to make their relatively minor weight savings worthwhile.

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Sample Build

Below is a sample ranger carbine build that comes in under 7.50 pounds. This build opts for a heavy barrel (HBAR) base rifle, which pushes the starting weight up and requires careful selection of all other components to minimize weight. However, even with the heavy-profile barrel, this build meets the Low Carry Weight Principle using the factory plastic stock, proving that costly carbon fiber stocks are not typically necessary.

Note: All weights measured in-person, not taken from manufacturer websites.

Howa Mini Action 7.62x39 HBAR Rifle (6.4 lbs from the factory)	5.8 lbs
• barrel modifications: cut to 16", 8 straight flutes, threaded muzzle	
Leupold VX-Freedom 2-7x Scope	0.69 lb (11.1 oz)
Talley Ultralight 1" Scope Rings (extra low height)	0.13 lb (2.1 oz)
Viking Tactics PES Ultralight Hunting Sling	0.23 lb (3.7 oz)
• weight includes two sling connectors	
Picatinny Rail Section and Sling Mounts	0.15 lb (2.4 oz)
.30 Caliber A2 Flash Hider	0.13 lb (2.1 oz)
• weight includes crush washer	
Comb Riser	>0.1 lb (>1.6 oz)
• foam padding stacked to proper height and taped in place	
Loaded "Carry" Magazine	0.22 lb (3.5 oz)
• 3 rounds of 7.62x39mm	
• higher-capacity magazines stowed in belt and backpack	
Grand Total	7.45 lb

Choosing a Cartridge

For many shooters, the search for a cartridge will end with 7.62x39mm (at least until .300 Blackout/.300 Whisper becomes available in steel-cased varieties). This round meets all of the below criteria, has a case volume and available bullet weights that work well for cold-loading for use with suppressors, and there are several rifle options that chamber it from the factory. However, any cartridge that meets the below criteria is acceptable.

Cost and Availability

Ammunition for your ranger carbine must be both readily available and affordable to permit constant training and preparedness. If you are able buy your chosen caliber at a sporting goods store, rather than being limited to gun shops, that's a good sign. In contrast, if you must wait a few days for your boutique ammunition to arrive in the mail, or an unexpected car repair makes you think twice about the cost of buying a few boxes, then you have likely chosen the wrong caliber.

For most shooters, these requirements exclude expensive (albeit effective) calibers such as 6.8 SPC and .44 Magnum.

Mild Muzzle Blast and Recoil

There isn't always time to put on hearing protection, and while shooting in an open field at the range might not put you in the hurt locker, firing off a few rounds in a dense forest or other close-in setting is an excellent way to lose your hearing for a few hours. Although no firearm is truly hearing-safe without a suppressor, intermediate cartridges are still noticeably quieter than full-power rifle rounds.

Recoil is also a consideration in a lightweight, fixed-action carbine - if your rifle's recoil causes discomfort, you will want to train with it less, and if you don't train with it, then it's not a ranger carbine. If the thought of shooting more than 100 rounds in a single session gives you pause, then you've got the wrong caliber.

Particularly given a ranger carbine's short (usually 16 inch) barrel, these requirements exclude full-power rifle rounds such as .308 Winchester. Muzzle brakes are also strongly discouraged.

Terminal Performance

An ideal ranger carbine cartridge must generate 350 ft/lbs of energy at 300 meters. Additionally, an ideal ranger carbine cartridge is .250 caliber (6.5mm) or larger and must generate at least 800 ft/lbs of energy earlier on in its trajectory - this is to permit a humane (albeit shorter-range) kill on wild game up to the size of white-tailed deer.

Note: 300 meters is an estimated maximum range at which a civilian could need to engage, and ~350 ft/lbs of energy is a good baseline for an effective hit as it is roughly equivalent to a 9mm pistol fired at point-blank range. There is much more to terminal performance than impact energy, but it remains a helpful measuring stick when used within its limits.

5.56 NATO/.223 Remington is not ideal due to mediocre terminal performance on deer-sized game. The [Notes on .223/5.56 Ranger Carbines](#) section on the next page elaborates on this point. Additionally, these requirements exclude most pistol cartridges, although some .357 Magnum and larger loads can make the cut from a 16" barrel at short range.

Accuracy

A cartridge must be able to achieve the Versatile Accuracy Principle out to 300 meters to be eligible for consideration - see page 3 for additional details on the Versatile Accuracy Principle. While shooter skill may factor into this test, it is generally advisable to choose bottlenecked, flat-shooting cartridges over straight-walled, rainbow-trajectory cartridges.

All that said, run what you bring. As long as you can hit the target when you want to, everything else is just noise.

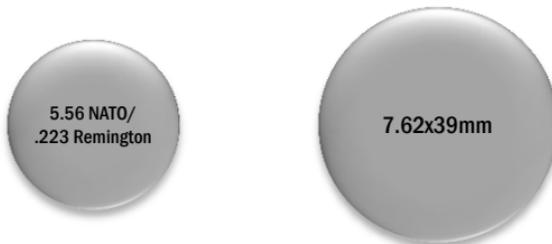
Ranger Carbine – Build Guide & Doctrines of Use

Notes on .223/5.56 Ranger Carbines

Although the .223/5.56 cartridge has many advantages, from low recoil to a flat trajectory to plentiful availability, it is not well-suited for chambering in a ranger carbine. While it does meet the energy requirements listed in the [Choosing a Cartridge](#) section on the previous page, the .224" bullets of this cartridge are just not wide enough, or heavy enough, to be consistently effective on deer-sized game (especially when firing cold-loaded ammunition).

That is not to say that no one has ever killed a deer with a .223 – of course it's been done. However, shooting a deer with a .223, versus a heavier chambering, is much more likely to result in a messy, painful, and slow death for the animal. Beyond the moral implications of inflicting needless suffering, going on a chase after a wounded animal also leaves the shooter vulnerable. The animal may be noisy and draw attention, and the long chase burns a huge amount of calories and can lead the shooter into areas and terrain they are not familiar with, potentially containing threats against which the shooter will not have the upper hand.

To explain exactly why .223/5.56 is less appropriate for deer-sized game, it's useful to compare it to a slightly more appropriate deer cartridge – 7.62x39mm. It should be noted that the difference in diameter between a .224" 5.56 NATO bullet and a .312" 7.62x39mm bullet is only 0.088" – not exactly earth shattering. However, that small increase in diameter nonetheless yields a massive 194% increase in cross-sectional surface area.



True-to-scale comparison of the frontal cross-section (surface area) of each bullet.

In very simple terms, a wider bullet translates to a wider, more deadly wound in the target (that's why hollow point bullets are designed to expand when they hit). When hunting game the size of white-tailed deer, ranger carbines are already at a disadvantage compared to traditional deer hunting rifles, which feature long, velocity-adding barrels and full-power cartridges. The short-barreled, intermediate-chambered ranger carbine needs all the help it can get to cleanly take a deer, so the relatively small .224" diameter of .223/5.56 bullets loses out when every speck of surface area is necessary to transfer energy, disrupt tissue, and ensure a humane kill.

The two bullets' differences in surface area are then multiplied when firing a good soft-point or hollow-point hunting bullet, as the bullets will mushroom and expand after impacting the target, translating to even more dramatic differences in the size of the wound channels.

Even worse for .223/5.56, its light and narrow bullets must be "built tough" with high sectional densities in order to ensure deep and reliable penetration in the target animal. This means even less expansion and mushrooming, and (again) a narrower and less damaging wound channel. With .223/5.56, the shooter must choose either a light, low sectional density bullet that fragments or expands well, but doesn't penetrate deeply, or a heavy, high sectional density bullet that penetrates well, but doesn't expand or fragment much.

In summary, .223/5.56 checks a lot of boxes and *is* an acceptable choice for a ranger carbine's chambering, but it is not ideal due to poor performance on deer and similarly-sized food game when compared to other intermediate calibers with wider, heavier bullets. If your ranger carbine must be chambered in .223/5.56, then you must also invest in the very finest of hunting bullets, carefully matched to your barrels' length and twist rate, and exercise the patience and resolve to stalk close and fire only when you have a clean shot on a calm animal.

Concealment Equipment

Imagine hiding in tall grass, behind the swell of a hill. Over the hill there is an enemy, possibly more than one. You must engage. You are hidden, for now, but to take aim you must creep over the hilltop's comforting bulk of grass and dirt. You will see them, and unless you are careful, they will see you, with only empty air between you and their bullets. Who sees who, and when, will become life and death.

The following concealment equipment will help ensure the element of surprise is a card you deal to your own hand, and no one else's.

Flash Suppressor

required

Although an observer will still be able to approximate your direction and distance based on the sound of your rifle's report, a flash suppressor will delay/prevent spotting of your exact position.

Anti-Reflection Device (killflash)

required if using an optic

A killflash prevents scope glint, which can give away your presence before you've even fired a shot. Killflashes do, however, cut the amount of light that enters the scope, so they should be easily removable for shooting in low light.

Sound Suppressor

optional, but recommended

A sound suppressor can delay or completely prevent an enemy from determining your position, direction, or distance, even after multiple shots. Additionally, sound suppressors save your ears when firing without hearing protection, maintaining your situational awareness. Finally, equipping a sound suppressor permits live-fire training at less rural/isolated ranges, which encourages more training overall. Purchasing a sound suppressor requires a lot of money and red tape (in the USA, at least), but for all the above reasons, they offer massive advantages for a ranger carbine.

Choosing a Flash Suppressor

Almost all dedicated flash suppressors (not "combo" flash suppressor/muzzle brake devices) do a surprisingly excellent job of reducing muzzle flash, so you can generally expect to be satisfied with even the humble A2 flash suppressor. However, secondary features are where you should spend some time thinking:

- Choose a flash suppressor that permits quick-attach/detach of your chosen sound suppressor (if applicable).
- Choose models without downward-facing ports, which will reduce (but not always eliminate) dust or snow getting kicked up when firing while low to the ground, while also removing the risk of setting fire to dry grass or brush underneath. Nothing guarantees you'll be spotted quite like lighting an actual fire on your position.
- Closed-end (birdcage-style) models are all but invincible and don't snag on undergrowth nearly as often as pronged models, but they typically cut a little less flash.
- Pronged flash suppressors often have a "ringing" effect that lasts a few seconds after firing and are typically heavier than birdcage-style designs - an AAC Blackout 90T weighs 4.6 oz, whereas an A2 flash hider is only about 2.0 oz and titanium variants of the A2 hover around one, single ounce.

Choosing a Sound Suppressor

Sound suppressors are heavy, attract huge amounts of attention from observers, and significantly hamper a weapon's handling, so a ranger carbine's sound suppressor is carried unmounted, stowed in the shooter's war belt or backpack until it is needed.

Since a sound suppressor will be stored in the war belt or backpack, there are no limitations on length, weight, or size. Quick-attach sound suppressors that mount onto the rifle's flash suppressor are recommended, provided they can maintain the Versatile Accuracy Principle.

Mounting the sound suppressor should take no more than 20 seconds.

Note: *Although a sound suppressor is undeniably useful, American sharpshooters have been making do without them since the Revolutionary War. Obtaining a sound suppressor in the USA is difficult for all and impossible for some, so while it is a highly recommended accessory for your ranger carbine, only the flash suppressor is a 'must have'.*

Muzzle Brakes

Although a quality muzzle brake can reduce the gun's recoil by 60% or more, adding a muzzle brake to a ranger carbine is not recommended for three reasons:

- 1) The ranger carbine's intermediate chambering makes recoil management a minor concern, so the massive recoil reductions achieved by a muzzle brake are simply not necessary
- 2) All muzzle brakes increase sound levels at the shooter's ear, and most of them increase it to dangerous levels. 10 db and higher increases are common, and a 10 dB jump is commonly accepted as doubling perceived loudness – put a muzzle brake on your gun and it will sound *twice* as loud. Without hearing protection, this can cause immediate, permanent (or at least lasting) hearing damage.
- 3) Many muzzle brakes *increase* flash, rather than decreasing it. Even devices marketed as a "flash hider/compensator" mostly just do one or the other.

Unlike a muzzle brake, a flash suppressor will typically *reduce* the audible report of the firearm by anywhere from 3-7 dB as measured at the shooter's ear, while sound suppressors can cut noise by 25 dB or more. Flash suppressors also reduce recoil by approximately 5-10%, as measured by several firearms publications, while the sheer weight of a sound suppressor will also help dampen recoil. For all these reasons, flash and sound suppressors are the right choices for a ranger carbine, and a muzzle brake is simply not.

Choosing Slings, Sling Mounts, and Sling Connectors

The sling is a critical attachment for a ranger carbine, and an ideal ranger carbine sling should be quickly adjustable for length using only one hand. This permits looser, more comfortable carry while walking, but still allows the rifle to be tightly and quickly strapped to the shooter's body when preparing for a climb, crawl, or sprint. Additionally, quick one-handed sling adjustment enhances accuracy when using the sling as a stabilizer for offhand shooting, allowing strap length and tightness to be quickly adjusted to stabilize different stances.

Finally, a ranger carbine's sling must accommodate both behind-the-back and across-the-chest carry to suit a broad range of readiness levels. This capability is typically achieved via some form of quick-disconnect sling connector and three or more sling mounts on the rifle stock itself – see the [Sling Mount Positioning and Carry Doctrine](#) section on the next page for full details.

Cotton and synthetic sling fabrics both have their respective advantages, so neither is recommended over the other. Leather slings are often the heaviest, most expensive, and least feature-rich of all slings, and are generally not recommended for a ranger carbine.

Weights of Popular Slings

Slings are heavier than most shooters realize. The sling itself, plus a sling connector at either end and sling mounts on the rifle stock itself, can easily add half a pound or more to your build. Choose carefully to ensure your sling setup weighs no more than it must.

Note: *The sling market is varied and extensive. The slings listed below are only a small section of the market, however, this build guide's authors have first-hand experience with each and every one of the below slings, and all of them feature some sort of quick-adjust device.*

Note: *All sling weights listed below were measured in-person, not taken from the manufacturer, to ensure the numbers are accurate.*

Ranger Carbine Sling Candidates

Product Name	Weight*	Pros	Cons
Magpul MS1, unpadded version	6.1 oz	<ul style="list-style-type: none">Extremely easy to adjust, even when the rifle is shouldered	<ul style="list-style-type: none">Heavy even without padding
Vicker's Combat Application Sling, padded version	5.6 oz	<ul style="list-style-type: none">Thick, comfortable padding	<ul style="list-style-type: none">Heavy
GI-style (Appleseed sling), cotton, unpadded version	3.6 oz	<ul style="list-style-type: none">LightweightInexpensive	<ul style="list-style-type: none">Slow, fiddly strap length adjustment, especially when the rifle is shouldered
Frank Proctor Heavy Duty Sling	2.0 oz	<ul style="list-style-type: none">Shockingly lightweightConnects to some stocks without hardware, lowering overall weight even moreSoundless fabric stock mounts	<ul style="list-style-type: none">Thin, unpadded strap is uncomfortable for long-distance carry
Viking Tactics PES Ultralight Hunting Sling	2.9 oz	<ul style="list-style-type: none">LightweightThin, lightweight padding"sticks" to the shoulder well	<ul style="list-style-type: none">More complicated to adjust than most competitors

*The sling weights listed above include sliders and buckles that are part of the sling itself, but no attachment hardware such as sling swivels or clips.

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Sling Mount Positioning and Carry Doctrine

The position of a sling mount has a dramatic impact on the rifle's behavior as it is carried, often making the difference between a rifle that is unpleasant to take on patrol versus a rifle that fits and acts like an extension of your body. For this reason, many modern tactical stocks are infested with sling mounts in every location and configuration imaginable. In contrast, a ranger carbine's traditionally-styled stock will likely come bare from the factory, but that blank slate is ripe for customization – see [Adding Rails and Sling Mounts](#) on page 22 for installation tips.

Most shooters will end up with multiple attachment points on either/both the front and rear of the stock to accommodate various levels of mobility versus readiness:

Mobility

The ranger carbine's sling must allow the rifle to be comfortably slung behind or across the shooter's back, permitting comfortable transport when covering long distances on foot. This configuration also keeps the shooter's hands free for climbing, crawling, and swimming. Finally, carrying the rifle behind or across the back projects a silhouette similar to a civilian hunter, reducing unwanted attention.



Note: When carrying the ranger carbine over the shoulder, be sure to tuck the sling's strap between the shooter's neck and the backpack's shoulder strap. If carrying the sidearm in a hip holster, also fit the rifle's butt into the gap between the sidearm's grip and the shooter's body. These two points "lock" the rifle in place at both the top and bottom, preventing the rifle from slipping off the shoulder.

For distance carry, sling mounts should be positioned to let the rifle hang with the optic facing out and slightly away from the shooter's body, since even the best optic mounts can shift zero after being bumped against the shooter's body for hours on end. The magazine and/or bolt handle of the rifle should also rest in such a way that they do not dig into the shooter's back or side – obtaining at least one low-capacity, flush-fit "carry" magazine is a good idea, as well.

Readiness

When threats are imminent, the ranger carbine should be slung on the shooter's front side where it can be quickly brought to the ready position. Additionally, carrying the rifle on the shooter's front side prevents the rifle's buttstock from crowding the grip of a sidearm in a hip holster, ensuring the sidearm can be drawn and brought to bear on a target swiftly. However, front-side carry telegraph's the shooter's tactical intent to any observer and dramatically reduces mobility, so this carry style should be employed sparingly.



Note: When carrying the ranger carbine front-side, begin with the rifle strapped tightly against the chest. Then, loosen the sling just enough that the rifle can be instantly brought to aim without adjusting the strap, and no looser.

For front-side carry of the rifle, single-point, two-point, and three-point slings all have their merits. Budget and weight restrictions may also come into play, as a well-appointed ranger carbine can have three or more sling attachment points, each costing both money and ounces.

Final Thoughts

Sling mount positioning is an intensely personal choice guided by individual body shapes, shooting styles, and more, and only field use can determine what works best for you. Consider temporarily attaching sling mounts with tape or long zip ties in order to see how the rifle hangs as you walk, run, climb, and crawl, then bolt or screw the mount into position once you're certain you like the setup.

Take the advice of others with a grain of salt – your arm length, chest size, gait, etc. are all unique to you, so individual experience should be the final deciding factor on sling choice and mount location. This is *your* ranger carbine - if it feels good and runs good, then do it.

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Sling Connectors and Mounts

There are many sling connectors on the market and the following tables capture most of the popular types. Their costs and features vary dramatically, but just as importantly, their weights do as well. Most rifle stocks include at least one or two sling mounts from the factory, but a ranger carbine can have three or more, so the weight can stack up fast. Total up the weight of any of the below connector/mount pairings, then multiple by two, three, or even four to get the total weight of your chosen sling attachment hardware.

Note: Electrical tape can be wrapped around a sling mount or connector to silence it, if it clicks or makes noise when being carried.

Note: In the charts below, the term 'connector' refers to the piece attached to the sling, and the term 'mount' refers to the piece that is fixed to the rifle stock.

Blue Force Gear ULoop ®

Weight (connector):	0.1 oz	
Weight (mount):	0.4 oz**	
Pros:	<ul style="list-style-type: none">• Extremely lightweight• Quiet (no metal-on-metal contact)• **Attaches to almost any loop or sling mount (except swivel studs)	
Cons:	<ul style="list-style-type: none">• Slow to attach/reattach.	

Magpul Paraclip ®

Weight (connector):	0.7 oz	
Weight (mount):	1.0 oz	
Pros:	<ul style="list-style-type: none">• Quick to attach/reattach• Easy to manipulate under stress or in various positions• Relatively easy to add a loop anywhere on a stock	
Cons:	<ul style="list-style-type: none">• Heavy	

hook, hook clip, HK-style

Weight (connector):	0.7 oz	
Weight (mount):	1.0 oz	
Pros:	<ul style="list-style-type: none">• Quick to attach/reattach• Easy to manipulate under stress• Relatively easy to add a loop anywhere on a stock	
Cons:	<ul style="list-style-type: none">• Noisy• Heavy• Can be difficult to remove in some shooting positions	

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Sling Connectors and Mounts, cont'd

quick disconnect, QD, push-button, socket

Weight (connector):	0.8 oz	
Weight (mount):	0.1 – 0.4 oz	
Pros:		<ul style="list-style-type: none">• Rounded, low-profile, or even flush-fitting socket mounts minimize snagging• Easy to find for sale• Quick to attach/reattach
Cons:		<ul style="list-style-type: none">• Difficult to operate while wearing gloves• Difficult to operate unless standing

GI-style (Appleseed-style) swivel clip

Weight (connector):	0.8 oz	  
Weight (mount):	0.6 – 0.9 oz	
Pros:		<ul style="list-style-type: none">• Quiet (after taping over metal hardware)• Quick to attach/reattach
Cons:		<ul style="list-style-type: none">• Heavy• Difficult to operate unless standing

swivel, sling swivel

Weight (connector):	0.5 – 0.8 oz	 
Weight (mount):	0.1 oz	
Pros:		<ul style="list-style-type: none">• Easy to find for sale.• Easy to add a stud anywhere on a stock• Quiet (after taping over metal hardware)
Cons:		<ul style="list-style-type: none">• Slow to attach/reattach.

Perfecting the Ranger Carbine's Stock

The process of customizing a ranger carbine to its individual owner is an extremely important step – this not just a ranger carbine, it is *your* ranger carbine. It should be fitted until it lines up just right, instantly, every time you bring it to your shoulder.

In most cases, modifying the factory stock is the best path to a perfect fit - it's cheap, effective, and not especially difficult. Fitting the rifle stock to your body and adding rails and sling mounts are well within the capabilities of most people with access to basic hand tools and a flat tabletop. Heat dissipation modifications require only a drill and some patience. Accurizing modifications are more complicated and will require a well-stocked workshop, but fortunately most modern bolt-action rifles are sufficiently accurate right from the factory.

Adjusting Length-of-Pull (LOP)

Proper LOP is an important aspect of accurate shooting, but one that is often overlooked in the nose-to-charging-handle tactical shooting culture. LOP refers to the distance between the rifle's trigger and the end of the stock, and a stock with proper LOP for your height, arm length, and body type will come to your shoulder more naturally and comfortably, breeding a consistent and accurate shooting stance. There are many excellent and completely free resources on the internet for measuring your particular body's ideal LOP – spend some time researching, but more importantly, some time shooting (in varying stances) to determine your ideal measurements.

Bear in mind that the ranger carbine is an all-weather firearm that will often be fired while wearing a backpack. The bulk of a winter coat and the padding of a backpack's strap may both shorten the ideal LOP, so if your rifle stock does not have adjustable LOP (most will not), remember to test comfort and fit in all possible scenarios and choose the LOP that seems the *most* applicable to the *most* situations.

Once you know your measurements, it's time to adjust your rifle stock. Some rifles or rifle stocks come with pre-fitted, removable spacers from the factory, or LOP spacer kits can be purchased aftermarket. If all else fails, inexpensive and lightweight LOP adjustment can be achieved through the use of simple wooden spacers, cut and sanded from plain wood, painted, and installed between your rifle's stock and recoil pad using extra-long bolts or screws.



LOP spacer kits like these are simple and effective, but if they aren't available for your rifle's stock, they can be crafted from wood fairly easily.

Adjusting Comb Height

Comb height refers to the amount of "lift" provided by the area on the rifle stock where your cheek rests. In general, iron sights need a fairly low comb height and optics require a higher comb height. Customizing the comb height to your exact setup pays dividends in accuracy as your neck can relax and your eye's placement behind the sight becomes much more consistent.

Some stocks come with integrated, screw-adjustable comb risers, which are effective but often expensive and heavy. Alternatively, inexpensive and lightweight comb height adjustment can be achieved by purchasing an strap-on cheek pad or stock pouch, and then cutting/layering foam pipe insulation, mousepads, or similar materials underneath to build up the height to the desired level. Duct tape and foam can also achieve the same effect with essentially zero added weight, but this setup lacks the storage offered by a stock pouch.

Perfecting the Ranger Carbine's Stock - continued

Adding Rails and Sling Mounts

A short rail section will typically be added under the forearm to allow a bipod to be mounted, but sling mounts can be added almost anywhere on rifle stock. Test which sling mounting locations work best for your preferred carry and shooting positions by strapping the sling mounts to the stock with duct tape or zip ties, then break out the hand tools for final install.

If the stock is wood, simply drill a pilot hole and screw the component on. Inlet the stock a bit beforehand if you want a cleaner look.

If the stock is plastic, it can be "inletted" by simply heating up the rail or sling mount with a torch/oven and pressing it into position in the stock. The plastic stock will soften and conform itself around the hot metal, and you can then then drill a pilot hole and screw the device in place. Plastic stocks are typically hollow in the buttstock, so you can also drill a hole, insert a bolt, and capture it with a nut inside the stock cavity (after removing the recoil pad for access).

Adding rails and sling mounts to fiberglass or carbon fiber stocks is trickier - consider having a professional perform these procedures.

Accurizing

There are whole books written about accurizing a rifle's stock, but at minimum, free-floating the barrel is recommended and can be performed with nothing more than sandpaper, a bit of PVC pipe, and some patience. Consult any one of many online tutorials for a how-to, and remember to remove enough material to ensure the barrel doesn't touch the forearm even after the rifle is braced on bipod, as it would be when shooting while prone.

The rest of the usual accurizing tricks (pillar bedding, glass bedding, etc.) are all welcomed at the whim of the shooter's budget and/or skillset. Trigger jobs and replacement parts should be approached more carefully, as reliability and durability take precedence over absolute bleeding-edge performance in a ranger carbine, and aftermarket parts/services should be chosen accordingly.

Heat Dissipation

Ranger carbines are meant to be shot, a lot, so it's a good idea to add some ventilation to your rifle's forearm. One or two rows of (small) holes drilled on or alongside the bottom axis of the forearm pull fresh, cool air in from below as air warms and rises around the barrel, without spoiling the ranger carbine's discreet aesthetic. However, bear in mind that these ventilation holes reduce the forearm's rigidity, which will not inherently affect the rifle's accuracy, but it does make the forearm yield more easily to pressure (from a bipod, for example) which could result in contact with the barrel, so additional relief space between the forearm and barrel may be needed.

Also consider giving your barrel some breathing room by adding a series of symmetrical cuts around the top of the stock's barrel channel, although be aware that aficionados may gasp in outrage at the presence of a gap between stock and barrel.



Ventilating the underside of the rifle's forearm will help keep the barrel cool, but don't go overboard. We want the barrel to catch an extra breeze, not turn the forearm into a machine gun's cooling shroud.

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Adjustable Stocks

Ranger carbines are fired from many positions and stances, so quick adjustability of both length-of-pull (LOP) and comb height are highly desirable. However, these features must be balanced against their added weight and, more importantly, their visual distinctiveness – adding an AR-15's collapsible stock will give you an excellent range of LOP adjustment, but it makes your rifle nearly as eye-catching as a true AR.

A number of stock manufacturers offer rifle stocks with discreet silhouettes as well as a small amount of LOP and/or comb height adjustment – not as much as an AR-15 stock, but just enough to make your rifle fit like a glove. However, these stocks tend to be heavy and/or expensive, but fortunately there are options for custom-fitting your rifle to your body without zeroing out your bank account – see the [Perfecting the Ranger Carbine's Stock](#) section on page 21 for more details.

Folding Stocks and Takedown Stocks

Making a ranger carbine smaller is always a good idea – the more compact the rifle is, the more discreetly it can be carried. However, there are very few takedown rifles on the market that can meet all three Guiding Principles – the Browning BLR is the only model that comes to mind, and it is both expensive and only offered in .223/5.56. Folding stocks are also an option to make your ranger carbine smaller, but most folders require adding a pistol grip to the stock, which spoils the ranger carbine's discreet aesthetic. The only inconspicuous folding stock on the market as of this writing is the Manners MCS-TF, but this stock requires a carbon fiber shell to make weight and thus will cost well over \$1,000.



©Manners Composite Stocks

Manners MCS-TF Folding Stock

Replacing the Stock Entirely

A replacement rifle stock is like new rims on a car – expensive and good-looking, but typically not impressive in terms of performance. With rare exceptions, replacement rifle stocks are simply heavy chunks of plastic that look cool and add a few features that frankly, you could have added yourself for a lot less money. Any aftermarket stock under \$500 is likely to *add* weight, rather than reducing it, so in most cases the factory furniture on your chosen rifle is good enough, requiring only a few modifications (see the [Perfecting the Ranger Carbine's Stock](#) section on page 21) to maximize its utility and become furniture befitting a ranger carbine.

However, it is possible to buy a stock that will cut weight from your build, you just need to spend a lot of money. Carbon fiber stocks often weigh around 1.5 pounds, whereas a hardwood, plastic, or fiberglass unit (which probably came on your rifle) will weigh in at around 2.2 – 2.5 pounds. Laminated wood stocks usually weigh 3 pounds or more.

A fully-inletted carbon fiber stock will typically cost well over \$500 just at MSRP – recoil pads, sling attachments, shipping, fitting, etc. may still apply on top of that. If you can afford it, however, it will provide all the weight savings your build could ever need.

Aesthetics and Coloration

The look of a ranger carbine is largely up to the shooter's taste and budget, but one key point should always be kept in mind: a ranger carbine's appearance *must not* draw attention or easily reveal itself to be more than a civilian hunting rifle.

Most drab, earth-toned colors are acceptable. Avoid flat black plastic wherever possible, and do not be afraid to use "rattle can" spray paint or camouflage tape to update colors to match season or geography.

When in doubt, the preferred color for the stock is medium-dark brown, a color that blends nicely into forest terrain (the most common environment in North America) while also giving the appearance of wood from afar – a bolt-action rifle with a wooden stock is about as unobtrusive as a long gun can get. Avoid 'coyote' and 'dark earth' colors, which tend to be lighter brown or tan and are intended for sandy environments, not wooded ones.

Dark matte finishes are preferred for metal parts – avoid gloss bluing or stainless finishes, even on the internals. A bolt body left in-the-white, like the one on the Ruger American, can gleam in sunlight as the shooter works the bolt even if its shiny surface is normally concealed.

Paint and Finish Types

The firearms community continues to idolize ultra-durable finishes, however, it is important to remember that a ranger carbine is simply a tool, not a prize. Scuffs and nicks on the exterior of your ranger carbine are a natural side-effect of its outdoorsy habits and are no cause for concern. Even if rust accumulates in a gouge in the finish, simply scrub off the rust and re-paint, if necessary - the gun will be just fine. Damage to the interior of the gun is obviously a different animal, but fortunately, common-sense lubrication and cleaning schedules are sufficient to keep most firearms cozy and clean on the inside.

Instead of sending your gun off to an (expensive) professional, opt for cheap paintjobs and at-home projects – they are cheaper, easier to update to match the season, and often more effective since you can utilize local plants and color schemes to create customized camouflage.

Choosing a Sighting System

Any sighting system may be used on a ranger carbine, from iron sights to red dots to scopes, provided that all three Guiding Principles can be met. The weight of the sight does count towards the Low Carry Weight Principle, so while a 5-15x50mm scope will make achieving 1.5 MOA much easier, you won't make weight with it. At the opposite end of the spectrum, iron sights weigh almost nothing, but few people can score 1.5 MOA at 300 meters using only irons.

For most shooters, the search for a sighting system will end with a variable magnification scope. When choosing magnification, remember that the scope should offer relatively quick reaction times at close range, but also enough magnification to make good use of the bipod.

In the end, the choice of optic will come down to a combination of cost, weight, and shooter confidence in what magnification level (if any) is required to achieve the Versatile Accuracy Principle. At the end of the day, as long as the three Guiding Principles are met, your choice was correct. To further inform your purchasing decision, see the below topics for additional guidelines and recommendations.

Guidelines for Minimizing the Weight of an Optic

- 1" scopes are typically lighter than 30mm scopes.
- Illuminated reticles often add 3-4 ounces to a scope's overall weight.
- Aluminum rings are just as good as steel rings for intermediate calibers, and much lighter.
- Two-piece bases are typically lighter than one-piece bases.

Long Eye Relief (LER) Scopes

LER scopes, also known as "scout" scopes, are neither recommended nor discouraged. LER scopes maintain good peripheral vision for the shooter, but they cut the field-of-view in the scope by approximately 50% compared to a traditional scope. Additionally, their mounts tend to be heavy, and placing the scope's mass farther forward makes the rifle heavier to hold at the ready position. They are not better than traditional scopes, just different, and either type is acceptable for a ranger carbine.

Optic Mount Height

Optic mounts and rings should be as short as possible to keep the shooter's head low, minimizing their silhouette. The deadliest sniper in history, Simo Häyhä, opted for iron sights over a scope because he felt a scope positioned his head too high, leaving him exposed. As a secondary benefit, low optics often make it easier to get a good cheek weld on the rifle stock.

Turrets

Optics with capped, low-profile turrets are recommended. Tall, exposed target-style turrets can snag on foliage or vehicle interiors, leading to accidental changes to the scope's settings. Additionally, slim turrets leave a clear path for the bolt on bolt-action guns, ensuring fast, smooth bolt operation.

Ring Clamping Screw Positioning

Due to the low placement of a ranger carbine's scope, scope rings that clamp onto the scope tube via side-mounted screws can intrude (slightly) into the bolt handle's range of motion on bolt-action guns. If possible, select scope rings that clamp together using screws at the top and bottom, rather than sides, to leave as smooth a path as possible for your knuckles.

Sunshades and Killflashes (anti reflective devices)

The shooter should carry equipment to prevent scope glint. The most elegant solution is a honeycomb killflash, which is inexpensive and can be installed or removed in seconds by choosing a model that fits between the body of the scope and a flip cap fitted onto the objective lens. A plastic sunshade is also simple to deploy, but is bulkier to carry. Finally, a piece of duct tape with a hole cut in the center is a reliable failsafe. See the [Concealment Equipment](#) section on page 15 for more information.

Chapter 3
Civilian Kit Build Guide

Choosing Body Armor...or Not?

Individual priorities will always be the overriding factor determining what gear is appropriate for a given situation, but despite its obvious advantages, body armor does not typically fit well within the ranger carbine's use case. This is not to say that body armor shouldn't be purchased and/or kept on-hand, or that it isn't useful in some situations, even critical. However, the simple truth is that body armor is typically heavy, uncomfortable, and highly conspicuous – all factors that conflict with discreet, highly mobile approach offered by the ranger carbine.

Choosing a Sidearm

The sidearm, preferably a duty-size pistol or revolver featuring an under-barrel flashlight, is an important piece of kit that offers close-quarters firepower to complement the ranger carbine's long- and medium-range authority, yet can still be concealed to maintain a discreet aesthetic.

Leave the frantic shrieks about magazine capacity and ideal caliber to the forums – if the gun runs well and you can shoot it accurately, then it is worth its weight on your hip. Any sidearm is permitted provided that the gun is reliable, does not draw excessive attention, and the shooter can competently and confidently handle it in close-quarters.

While there is little to say regarding the sidearm itself, there is a great deal to discuss with respect to holsters. Read on to the [Choosing a Holster](#) section, and if you are thinking much longer and harder about which holster, rather than which gun, then your head is likely in the right space.



Duty-size semi-automatic handguns with under-barrel flashlights make superb companions for a ranger carbine.

Choosing a Holster

The holster will be high up on a list of gear most likely to get swapped out based on field experience. It is simply very difficult to anticipate how a holster will feel as you load up your other gear, move through different shooting stances, and maneuver in your environment. Use the below factors and guidelines to inform your buying decision.

Comfort While Living

Many well-regarded holsters are oriented purely towards short-duration, high-intensity tactical environments, and they excel at these tasks. Sit down to drive a car wearing one, however, and their shortcomings become immediately apparent. The sidearm paired with a ranger carbine should be versatile - as comfortable and convenient as possible for mundane activities like driving, using the bathroom, or tying your shoes. If it is uncomfortable or inconvenient, it will start to find it's way off of your body more and more frequently, negating the purpose of having a sidearm in the first place.

Comfort While Prone, Squatting, and Sitting

Everyone shoots a bit differently, but remember that your chosen holster must be comfortable in all shooting positions. Consider the below shooting positions (and more) and pick out the ones you like to use, then choose a holster that will be comfortable for your preferred postures.

- Prone with legs spread
- Prone with bent knee on strong side
- “rice paddy prone”
- Seated on one knee
- Seated with legs crossed
- Crouched

Active Retention

A holster for a ranger carbine's companion sidearm should feature some form of active retention i.e. a lock, snap, or buckle that must be manually disengaged to withdraw the firearm. This is purely to ensure retention, since the ranger carbine's emphasis on mobility will put the shooter through more acrobatics than a typical friction-retention holster can withstand. Imagine climbing a wall, crawling under a fence, or jumping out of a boat and swimming to shore. If you don't have absolute confidence that your sidearm will still be with you after all three, then you've likely got the wrong holster.

Avoid retention systems that lock to the trigger guard – keeping moving parts away from the trigger is generally a smart decision. Instead, opt for a holster that locks to the ejection port, accessory rail, or weapon light. Often overlooked, the humble thumb-snap is an inexpensive, fool-proof, and time-proven retention design.

Thigh, Chest, and Shoulder Holsters

These holsters remove the weight and bulk of the sidearm from the war belt, which frees up space for other gear and better distributes weight. They are also comfortable for most forms of kneeling, sitting, or prone shooting, unlike some styles of hip holster. However, they may spoil the ranger carbine's discreet aesthetic, and thigh holsters in particular constantly catch on doorframes, foliage, vehicle interiors, etc. Additionally, only hip holsters let you “lock” the ranger carbine's stock into the sidearm's grip – see the [Sling Mount Positioning and Carry Doctrine](#) section on page 18. Thigh, chest, and shoulder holsters can be worthwhile options, but consider carefully before deciding on them.

Leather vs Kydex

Each material has pros and cons, so individual shooter preferences will take precedence when choosing between the two. However, it is worth noting that leather is both quieter and slightly less threatening in its aesthetic, while Kydex keeps its rigidity over time and is usually available with more modern and effective retentions systems.

Setting Up a War Belt

Not just a surefire way to keep your pants from falling down, a war belt offers quick access to frequent-use items like flashlights and cell phones, as well as high-priority items like spare magazines and first aid.

Choosing a War Belt

A war belt will not always be loaded with gear, so in order to maintain a discreet appearance, a war belt should be no bigger than about 1.75" in width, and camouflage or 'tactical' colors like FDE or OD green should be avoided if possible. MOLLE straps and similar attachment systems project an appealingly tactical aesthetic and are undeniably handy, but they are also dead giveaways that the wearer is a potential threat, and should be either covered up or avoided completely.

Two-piece belt systems featuring a detachable outer belt are helpful – these belt systems permit the entire outer belt (complete with sidearm and equipment pouches) to be quickly removed for either comfort or discretion, with the inner belt remaining in place to keep your pants up.

Configuring a War Belt

The war belt is meant only for frequent-use and high-priority equipment – anything else should go into the backpack or be left behind. Space on the war belt is at a premium because any high-use or high-priority equipment needs to be quickly accessible, meaning it should ideally sit isolated on the belt, not crowded in with the straps and snaps of a half-dozen other pouches nearby.

Making matters worse, the holstered sidearm immediately takes up a large chunk of the war belt's real estate on the shooter's strong-hand side (unless the shooter has opted for a thigh, chest, or shoulder holster), so in the end, usually just one side and the back of the belt are available for storage.

Finally, the entire front side of the ranger carbine's companion war belt should remain empty of equipment - any front-mounted equipment will jab you in the gut every time you go prone, or even sit down in a chair. Leaving this area empty also allows an unzipped vest or jacket to conceal the equipment mounted to the sides or rear of the war belt from view.

The below list summarizes the equipment recommended for mounting on the war belt, but bear in mind that individual and situational priorities will always be the overriding factor when deciding what to take with you that day:

- Sidearm, in holster.
- Two spare pistol magazines.
- One spare rifle magazine.
- Some form of first aid.
- A multi-tool and/or a fixed-blade knife.
- A general storage pouch (can be combined with the spare rifle magazine pouch).
- A cell phone or other communications device.

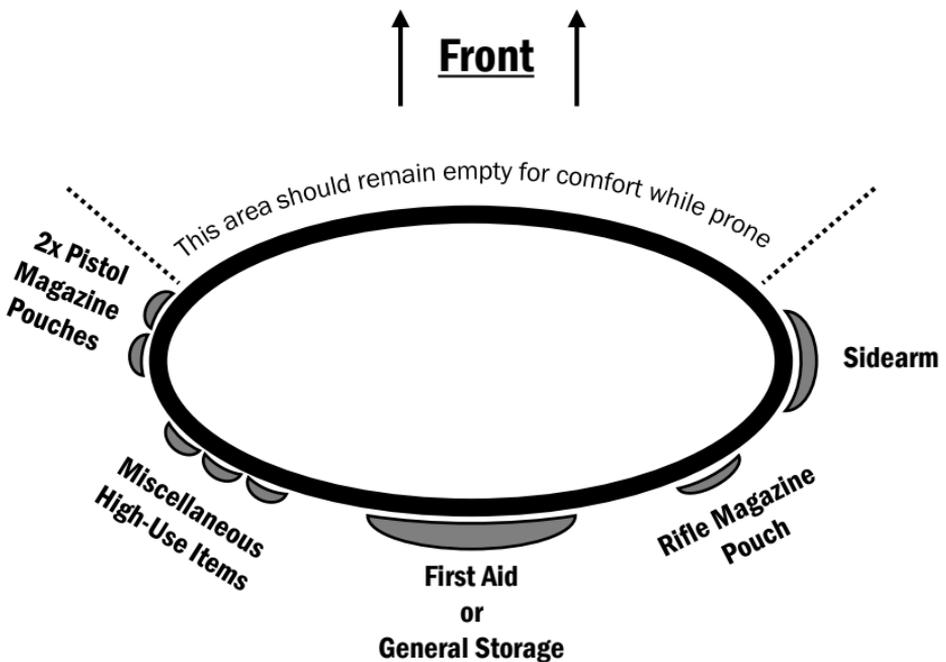
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Example War Belt Configuration

The below diagram illustrates a right-handed war belt that is optimized for wear while shooting from the prone position, but still puts the sidearm and its spare magazines within easy reach. This type of configuration is ideal for pairing with a ranger carbine.

Note: Leaving the front section of the war belt bare is not only more comfortable when shooting while prone, but more discreet as well, allowing a jacket, vest, or button-up shirt to hang over and conceal the equipment on the sides and rear of the belt.

Note: Shifting the belt buckle to the back or sides of your hips, rather than the traditional placement under your belly button, can make prone shooting more comfortable at the cost of more difficult buckling/unbuckling.



Test, Adjust, and Test Again

Once you've decided what equipment goes where, it's time for a test run. Equipment on the war belt can interact unexpectedly with various shooting positions, different postures being totally comfortable or wildly unpleasant depending on the exact size and positioning of gear on your particular war belt. It is highly recommended that you practice your various preferred shooting postures while wearing your loaded war belt before deciding on a final configuration.

If possible in your local area, load up your war belt (you may opt to omit the handgun for this portion) and go for a long walk, or better yet, a hike. Run a bit, climb a bit, and crawl a bit, too. You'll be stunned by the difference between your living room and the great outdoors, and you'll gain invaluable insight into how your war belt does (or doesn't) work as you want it to.

Choosing a Backpack

Many backpacks can fit the bill, although backpacks oriented toward hiking or other outdoors activities are often ideal. When selecting a backpack to pair with your ranger carbine, there are four main considerations:

(1) A discreet appearance.

As always, avoiding attention is one of the primary goals of the ranger carbine and its associated civilian rig. Avoid camouflage or ‘tactical’ colors like FDE or OD green for your backpack. Just like the war belt, MOLLE straps and similar attachment systems project an appealingly tactical aesthetic and are undeniably handy, but they are also dead giveaways that the wearer is a potential threat, and should be either covered up or avoided completely.

(2) Chest and/or waist straps.

The backpack should be able to strap tightly to the shooter’s body, allowing running, climbing, crawling, and swimming at a moment’s notice. Backpacks that feature both an across-the-waist strap as well as an across-the-chest strap are ideal.

(3) Just big enough.

If you heft your backpack and mutter “seems a little small” then you’ve probably got the right size. A bulky or over-stuffed backpack will make it difficult to sling your rifle across-the-back, in addition to being simply less pleasant to carry. Bear in mind that you should not aim to carry everything you could possibly need, instead, carry only what you cannot do without.

Although they are difficult to find, “beavertail” backpacks are excellent for maintaining a slim profile while still allowing bulky items to be carried when needed.

(4) All-weather capability.

Expecting a dry interior after swimming across a stream might be a tall order, but a long walk in the rain should still yield dry ammunition, matches, and other items inside your pack. For those that can’t/won’t purchase a high-quality waterproof pack, waterproofing spray can be used on almost any run-of-the-mill pack and works reasonably well, although it must be re-applied regularly.

For serious waterproofing of small items, use a “ranger purse” (named for the Army Rangers, not the ranger carbine), a sandwich bag reinforced with duct tape. Ranger purses weigh almost nothing and cost even less, but be sure to opt for zip-lock bags instead of slide-lock, as slide-lock bags spring leaks early and often.

If you’re headed into some serious wet, a heavy-duty trashbag with the neck twisted shut and rubber-banded (“goosenecked”) works phenomenally for keeping everything inside it dry and afloat, and like a ranger purse, cost and weight are almost non-existent. Keep one (or a few) trash bags in your pack and they can double as a raincoat or a makeshift waterproof tent, too.

The End

Time to get your build started.